RESIDENTIAL SEGREGATION AS A BARRIER TO COVID-19 BOOSTER COVERAGE IN DEEP SOUTH

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Chengbo Zeng[1,2], Jiajia Zhang[3], Zhenlong Li[3], Xiaowen Sun[3], Huan Ning[3], Xueying Yang[3], Sharon Weissman[3], Bankole Olatosi[3], Xiaoming Li[3]
[1] Brigham and Women's Hospital, Boston, MA, USA, [2] Harvard Medical School, Boston, MA, USA, [3]University of South Carolina, Columbia, SC, USA

BACKGROUND

- COVID-19 had been a stronger hit in Deep South compared with other developed regions in the United States, and vaccination remains a top priority for all eligible individuals.
- Limit data regarding the progress of booster coverage in the Deep South and how the coverage varies by county and age group.
- Racial/ethnic disparities were found in the COVID-19 vaccination, but the vast majority of evidence was generated from studies at the individual level.
- We evaluated county-level COVID-19 booster coverage by age group in the Deep South and examined its relationship with residential segregation.

METHODS

- This is an ecological study at the population level across the 418 counties of five Deep South states from December 15, 2021 to October 19, 2022.
- We analyzed the cumulative percentages of county-level COVID-19 booster coverage by age group (e.g., 12 to 17 years old, 18 to 64 years old, and at least 65 years old) by the end of the study period.
- We examined the longitudinal relationships between residential segregation, interaction of time and residential segregation, and COVID-19 booster coverage using Poisson mixed model.

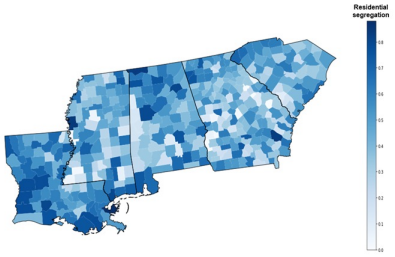

Figure 1. County-level residential segregation score

Main Findings

Table. Residential segregation and COVID-19 booster coverage by age group in the 418 counties across the five Deep South states from December 15, 2021 to October 19, 2022†

Model 1	Main effects				
	Overall‖	12-17 years old‡	≥ 18 years old	18-64 years old	≥ 65 years old
Time	-0.058 (-0.078, -0.038)	0.055 (0.037, 0.074)	-0.051 (-0.072, -0.031)	-0.053 (-0.079, -0.027)	-0.028 (-0.044, -0.012)
Residential segregation	-0.066 (-0.086, -0.045)	-0.009 (-0.039, 0.020)*	-0.067 (-0.088, -0.047)	-0.074 (-0.099, -0.049)	-0.044 (-0.060, -0.028)
Model 2	**Main effects and interaction**				
Time	-0.082 (-0.100, -0.064)	0.044 (0.026, 0.061)	-0.077 (-0.095, -0.058)	-0.080 (-0.102, -0.058)	-0.051 (-0.068, -0.034)
Residential segregation	-0.073 (-0.094, -0.052)	-0.016 (-0.046, 0.014)*	-0.075 (-0.096, -0.053)	-0.083 (-0.109, -0.058)	-0.049 (-0.065, -0.032)
Time*residential segregation	0.054 (0.040, 0.069)	0.031 (0.018, 0.044)	0.057 (0.042, 0.072)	0.065 (0.049, 0.082)	0.047 (0.032, 0.062)

†: Unless otherwise noted, study period was from December 15, 2021 to October 19, 2022.
‡: The first record for the group of 12 to 17 years old was available on January 27, 2022. For other groups, the first record was available on December 15, 2021.
‖: From December 15, 2021 to January 26, 2022, the overall population referred to people at least 18 years old. Since January 27, 2022, it referred to people at least 12 years old.
Confounders: Gini index, proportion of people with public assistance, proportion of people in low working class, proportion of people with low education, proportion of noncitizen, household size, primary care provider rate, proportion of adults that report fair or poor health, proportion of households without car access
*: Model 1: *P*=.55; Model 2: *P*=.30.

RESULTS

- Deep South experienced slow progress of booster vaccination across the age groups.
- Geospatial heterogeneities were found in residential segregation and booster coverage (Figure 1 & 2)
- As time increased, higher segregated counties had lower percentages of booster coverage (Table).
- The relationship was consistent across the age groups.

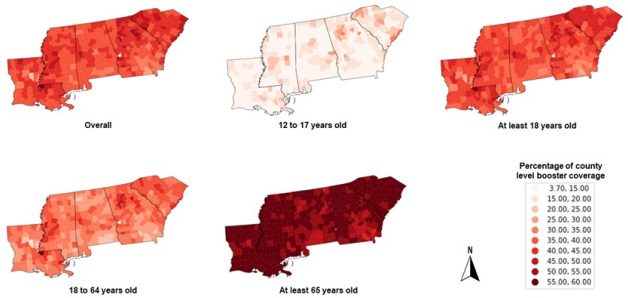

Figure 2. County-level COVID-19 booster vaccine coverage

CONCLUSIONS

- The progress of county-level COVID-19 booster coverage in the Deep South was slow, especially in youth and adults.
- More efforts regarding vaccine planning and implementation are needed in the Deep South. These efforts should focus on youth, parents, and adults and promote health education regarding the safety and effectiveness of the COVID-19 vaccine in the communities.
- At the population level, residential segregation was a barrier to COVID-19 booster coverage.
- To promote booster coverage, there is an urgent need for healthcare facilities and resources in racial/ethnic minority communities.

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CONTACT INFORMATION

Chengbo Zeng, PhD
Patient-Reported Outcome, Value, and Experience Center
Department of Surgery, Brigham and Women's Hospital
Harvard Medical School
Email: czeng8@bwh.harvard.edu

Big Data Health Science Center
UNIVERSITY OF SOUTH CAROLINA